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November 1988

# Managing Competing and Unwanted Vegetation

## Final Environmental Impact Statement

## Record of Decision

# Record of Decision

for

USDA Forest Service
Pacific Northwest Region
Final Environmental Impact Statement

Managing Competing and Unwanted Vegetation

November 1988

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# Record of Decision
# Managing Competing and Unwanted Vegetation
# Final Environmental Impact Statement

## INTRODUCTION

### General Overview

Managing the National Forests in the Pacific Northwest often requires controlling vegetation. Examples include brush along roadsides, shrubs in new tree plantings, and noxious weeds. There are a number of ways to treat these kinds of competing and unwanted vegetation, such as cutting it with hand tools, spraying with herbicides, or even plowing it under.

Taken together, all of our activities directed at managing competing and unwanted vegetation each year constitute a large program. This program can have significant environmental effects. The public has been especially concerned about the environmental and human health effects of the use of herbicides and prescribed fire. Other concerns include our ability to maintain production of goods and services, and the costs and effectiveness of our program.

We have worked closely with interested members of the public and cooperating agencies in developing a new vegetation management program and the associated environmental impact statement (EIS). After carefully considering comments from the public, scientists, and government agencies on the Draft Environmental Impact Statement (DEIS), issued in October 1987, a Final Environmental Impact Statement (FEIS) was prepared and issued. The Final EIS is the basis for my selection of a new program of vegetation management.

### Scope of the Decision

The decision I am making is to select a Regional program that guides the management of competing and unwanted vegetation. The program defines a common Region-wide approach. My decision includes specific requirements that apply to all vegetation management activities. The decision establishes policy and direction for subsequent site-specific environmental analysis. Site-specific projects may be planned individually or in groups. Groups of projects may include annual programs of work.

Vegetation management activities include: site preparation, conifer release, fire management activities, range improvements, noxious weed control, wildlife habitat improvement, recreation and administrative facilities maintenance, roadside and corridor maintenance, and tree genetics program and research activities. Activities in National Forest nurseries are excluded, and are being considered in a separate EIS. Prescribed burning for the primary purpose of hazard reduction is also excluded.

Methods include the use of herbicides, prescribed burning, manual, biological, and mechanical techniques.

Many of the activities are large programs and have a variety of actions and tasks. My decision here pertains only to the portion of each activity that deals with managing competing and unwanted vegetation.

Site-specific analyses for individual vegetation management projects will be guided by this EIS and my decisions here. Each site-specific project will be planned using the process prescribed by the National Environmental Policy Act (NEPA), and tied to this EIS, as well as to National Forest Land and Resource Management Plans.

This EIS replaces the 1981 Vegetation Management EIS. Among other items, it analyzes new standards and guidelines for vegetation management. It also includes human health risk assessment and worst case analysis. Further, it considers the plaintiffs' remaining claims for relief in the July 13, 1983, suit which led to the injunction on the use of herbicides on National Forests in the Pacific Northwest Region.

## Analysis Process

The vegetation management EIS examines alternative ways to address the main issues and predicts the effects and tradeoffs that would result. The following steps were included in preparing the environmental study:

- Public involvement throughout the process;
- Identifying issues and deciding the scope of the decision;
- Developing alternatives;
- Working with cooperators and special interest groups;
- Analyzing effects of the alternatives;
- Identifying the preferred alternative(s);
- Publishing a Draft EIS;
- Receiving and analyzing public comments on the Draft EIS;
- Preparation of a Final EIS; and
- Selection of a final preferred alternative.

This decision is a culmination of that process.

THE DECISION

**I have selected Alternative H.**

**The Interdisciplinary Team formulated Alternative H in response to comments from the public on the Draft EIS. This decision is intended to emphasize the prevention of vegetation management problems. And it reflects my desire to reduce this Region's reliance on herbicides. It also means that we will have all tools available for managing competing and unwanted vegetation. However, we will prefer the use of non-herbicide methods. Using herbicides will require special considerations.**

The main features of the selected alternative are as follows:

| | |
|---|---|
| Philosophy and concept: | Incorporate some features from all three of the Draft EIS preferred alternatives. Emphasizes: 1) protecting human health; 2) promoting long term health and productivity of forest ecosystems; 3) meeting goals and objectives of land management plans. |
| Theme: | Prevention. Reduce reliance on herbicides. Provide for goods and services at high levels. |
| Manages competing and unwanted vegetation: | With all tools; non-herbicide tools are preferred. Herbicide use requires special considerations. |
| Time for action: | Evaluate when vegetation problems are expected. Act when evidence indicates significant damage or growth loss will occur. |
| Project design: | |
| 1) Strategy: | Prevention is preferred: preempt problems. Design correction to move toward prevention. |
| 2) Human Health: | Analyze risk prior to use. Select a low-risk suitable method. Use herbicides only when necessary. |
| 3) Environmental Effects: | Minimize by following land management plans and vegetation mitigation measures. Use site-specific environmental analysis. |
| 4) Tools Available: | All tools permitted. Use herbicides only when other methods are ineffective, or will increase project cost unreasonably. |
| 5) Budget and Costs: | Consider project cost efficiency along with human health risks and environmental effects. |
| 6) Outputs: | Support levels of forest commodities at the level identified in current or future land management plans. |

## Complete Description of the Selected Alternative

### Purpose and Theme

The purpose of this alternative is to conduct a Regional vegetation management program so that it: 1) protects human health; 2) promotes long-term health and productivity of forest ecosystems; and 3) meets the goals and objectives of land management plans.

The theme here is to reduce the reliance on herbicides, to continue the reduction in the use of fire for treating slash, and to support providing goods and services at high levels.

To achieve its purposes and theme, this alternative emphasizes preventing vegetation management problems. All methods for managing competing and unwanted vegetation will be available. Protecting rural communities and wildernesses from the effects of smoke is a high priority. This alternative also requires early involvement of the public to help set project goals, assist in environmental analysis, observe project implementation, and to monitor the results of projects.

### Time for Action

The intent of this alternative is to detect and resolve vegetation management problems before they cause serious losses or require large correction projects. This calls for evaluating the need for action when problems are expected. The evaluation should include site-specific surveys and documented local experience. Then, when the evaluations verify that the expected problems are likely to occur, action will be taken. This approach will help managers to detect and control vegetation problems before they cause damage.

At times, results of the evaluation may be inconclusive and managers won't be sure that serious damage will occur. Managers may then elect to take a "wait and see" approach. That is, they can defer action until it is clear that a problem is developing. In some cases, the "wait and see" approach may reveal that the damage is minimal and that further action is not needed.

Project Design

The factors to consider in designing projects include:

Strategy: This approach emphasizes the use of prevention and natural processes to manage competing and unwanted vegetation. It requires creative solutions that use the biological and technical knowledge gained through monitoring. Managers will need to anticipate potential vegetation management problems and take steps to avoid them. When corrective measures are needed, those projects should be designed to move toward preventive strategies.

The planning stage for any project (such as timber harvest, road construction or range improvement) is the most appropriate time for implementing a prevention strategy. For example, the site analysis may identify a plant association known for its potential to compete with crop trees. A harvest prescription may then include measures to limit the vigor of competing vegetation, be designed to reduce the need for subsequent corrective action (in this case, release), and result in lower overall costs.

Human Health: The evaluation of human health risks, including exposure to hazardous substances and injuries, is an important factor in designing projects and in selecting vegetation management methods. All methods that are being considered will be analyzed prior to use for potential direct and indirect effects on human health. Herbicides will be used only when necessary. Selected methods will present low risk when compared to other methods that could also meet the design criteria.

The protection of recreational and rural residential populations from exposure to smoke from forestry burning will be given special attention. All means of smoke management (reduction, avoidance, and scheduling) will be employed as appropriate.

Environmental Effects: Adverse effects will be minimized by using: 1) site specific environmental analysis; 2) mitigation measures described in this EIS; and (3) natural processes. The site specific environmental analysis will address potential environmental effects for proposed projects. They will also help identify project designs and mitigation measures that will be necessary to minimize adverse effects. The diversity and integrity of the natural ecosystem and long-term productivity are major considerations in this process.

Tools Available: Alternative H makes all tools available while working toward the goal of reducing reliance on herbicides. Using herbicides requires special considerations to establish their need, assess the risks, and to implement special mitigation measures. Herbicides will be used only when necessary; that is, when other methods would not be effective, or their costs would be unreasonable. As a part of the site specific NEPA process, responsible officials will document the criteria they used in establishing the need for using herbicides.

Vegetation treated with herbicides will not be burned for at least one year following treatment. However, prescribed burning is available, often being the preferred method for reducing the natural accumulation of dead plant debris, maintaining ecosystems at a more productive stage of succession, regenerating decadent, fire-dependent plant communities, and to sanitize disease-infected stands.

Three specific herbicides (of the sixteen that were evaluated in this EIS' risk assessment) will not be used: amitrole, diuron, and fosamine. One herbicide, 2,4-D, will be used only as a last resort. The use of other herbicides requires using special mitigation measures summarized in this Record of Decision and detailed in Chapter IV of the EIS.

Amitrole will not be used because there is a high probability for the public and workers of receiving a toxic dose if exposed to amitrole during routine operations. In addition, there is strong evidence from animal studies that amitrole has high cancer potency.

Diuron and fosamine will not be used because there is insufficient information for conducting a full toxicological evaluation for both herbicides. In addition, limited data suggest that diuron has relatively high toxicity and a high risk of exposure to the applicator during backpack applications.

With respect to 2,4-D, studies about its cancer causing potential have conflicting results--some show a positive association with cancer, others do not. Although the studies completed to date do not support a conclusion that 2,4-D causes cancer, the question remains unresolved. In reaching the decision to use 2,4-D as a last resort, I also considered its demonstrated potential for adverse neurotoxic, reproductive and developmental effects.

There are, in addition, special mitigation measures required when herbicides are used. These mitigation measures are identified in the EIS.

The use of all tools and methods requires operator safety training and proper protective gear. The Forest Service will coordinate vegetation management activities with its cooperators. In addition, all contracts will provide for worker education and safety, including the use of protective clothing, at a level equivalent to that specified for Forest Service employees.

Forest managers will continue to evaluate and monitor tools and intensity of application. Methods used will continue to change based on new research, analysis of completed projects, improvements in technology and public need.

Outputs: Vegetation management activities will be those required to support the production of forest goods and services at a level approximating those of the applicable land and resource management plans.

Budget and Costs: The costs of the activities will vary, but will be within the budgets that can be reasonable expected. In selecting vegetation management methods for projects, human health risks, environmental effects, project-specific decision criteria, and cost-efficiency will be considered.

RATIONALE

I considered three main areas of information in reaching the decision for Alternative H:

- What the public told us.
- What we learned from the analysis.
- The resource management goals for the Pacific Northwest Region.

The Public

Of course different people have different ideas about how we ought to manage competing and unwanted vegetation. But from listening to people at meetings and in reading their comments to the Draft EIS, we heard several main messages.

- People want us to conduct our program so that it doesn't pose a health threat to the people who use National Forest land, to the people who work there, or to neighbors.
- The public wants us to continue providing goods and services at a high level.
- People expect us to protect the forest environment -- in fact, our program should promote the long term health and productivity of the forest ecosystem.

Public responses to the draft tended to favor four alternatives; relying on Forest Plans (Alternative B); emphasizing prevention and natural processes (Alternative D); restricting some herbicides (Alternative E); and an alternative that was submitted to us as part of the responses to the DEIS, producing a high level of goods and services (Alternative B+). The selected alternative (H) was developed using the main concepts of B, D, E, and B+.

The Analysis

Our analysis was one of the most extensive we have ever undertaken. It covered a broad range of programs and activities, as well as technical details of economics, timber yields, and herbicide information. The main things we learned from our analysis were that:

- We do not have to sacrifice timber production to assure human health, or vice-versa.
- The health risk of most of the herbicides we analyzed can be managed, and can be made acceptable. We do not have to eliminate their use to protect human health.

## Resource Management Goals

We manage competing and unwanted vegetation so that we can meet basic resource management goals: grow new trees, keep roads open and safe, control the spread of noxious weeds, and other multiple use objectives. In other words, vegetation management is not a program with its own end. It supports production of goods and services in many program areas. In reaching my decision, I looked for an alternative that would enable us to meet the goals and objectives of our land and resource management plans as much as possible.

## Conclusion

This decision, like most, is aimed at satisfying several different needs. In this case, I was looking for a balance of responding to the public health concerns, using new knowledge gained from our analysis, and meeting basic resource management goals. Often a decision has to trade-off or sacrifice advantages in one area for those in another. But in this case, I believe that I was able to meet the needs of all major concerns by selecting Alternative H.

## THE ALTERNATIVES

There were eight alternatives for this decision. The first seven were presented in the Draft Environmental Impact Statement. These came from the issues that the public helped us formulate, and were the heart of our analysis. The following is a brief description of each of those alternatives, including Alternative H, which was developed in response to public comments and built from elements of existing alternatives, and others that were considered but not analyzed.

A summary description of each of the alternatives follows.

### Alternative A

This alternative was designed to eliminate all risk associated with the use of herbicides in managing competing and unwanted vegetation. Other effective and efficient techniques are to be used. This is the "no herbicides" choice.

Alternative A approximates the current vegetation management program, carried into the future. Herbicides are not currently available as a management tool, due to the U.S. District Court injunction of 1984.

### Alternative B

All effective and efficient techniques for managing competing and unwanted vegetation are available, consistent with the direction provided in applicable land and resource management plans. This was used as a reference alternative.

The management of competing and unwanted vegetation specified in this alternative approximates the direction in current and in proposed Forest Plans. The Fiscal Year 1989 program serves as the reference for budgets, outputs, and vegetation management activities for all alternatives.

Alternative B was one of three preferred alternatives (along with D and E) in the Draft EIS.

### Alternative C

The vegetation management approach here is one of "no action" unless public safety is clearly and directly threatened. For example, hazard trees will be removed from campgrounds, and roadside brushing will be done to maintain safe travel, but virtually all of the vegetation management normally associated with forest management will not be done. Some resource production objectives may not be met.

There is virtually no active intervention to manage competing and unwanted vegetation in Alternative C. Only situations that pose a direct threat to public safety will trigger action to suppress unwanted vegetation; and, in these cases, neither herbicides nor fire will be used.

This alternative is the "no action" alternative required by regulation (40 CFR 1502.14). While it serves an important analytic role, it is also an alternative that could be implemented if it were selected. However, it is a dramatic departure from the manner in which the National Forests have historically been managed.

Public involvement will occur infrequently, primarily because of little or no vegetation management activities. If a vegetation management project is proposed, NEPA guidelines will guide the public involvement efforts. I am identifying Alternative C as the environmentally preferred alternative in the EIS.

### Alternative D

The key to this alternative is the integration of natural ecosystem processes into managing competing and unwanted vegetation. Here, vegetation management emphasizes the implementation of the philosophy of having the least impact on the natural environment while producing products and amenities for human use.

The implementation of the alternative will involve early preventive measures, monitoring of sites, and frequent evaluations of conditions and practices. Vegetation is managed to avoid the need for corrective measures; however, correction, if needed, is done in a way to least alter natural ecosystems and processes. Herbicides under this alternative are available as a last option. It requires the consideration of the health of those ecosystems as seen in conditions such as growth and diversity.

This alternative places an increased emphasis on early involvement of the public in environmental analysis procedures, and on carrying this participation through to project implementation and monitoring.

Alternative D was one of three preferred alternatives (along with B and E) in the Draft EIS.

### Alternative E

This alternative is designed to reduce the risks of herbicide use to the public, and to reduce the risk of herbicide use and manual vegetation treatments to forest workers. No aerial application of herbicides is permitted; specific herbicides are prohibited; and additional safety requirements for workers are imposed.

Herbicides reviewed by the Forest Service are permitted, except 2,4-D, amitrole, diuron, and fosamine. "Brown and burn" techniques are not used. Bromacil, 2,4-DP, and simazine will not be applied using backpack techniques. Special safety considerations apply for the use of all herbicides. Alternative E was one of three preferred alternatives (along with B and D) identified in the Draft EIS.

Alternative F

This alternative is designed to manage competing and unwanted vegetation without the use of prescribed fire for silvicultural purposes. All other effective and efficient techniques of vegetation management are available.

The burning of logging slash would be allowed only to reduce wildfire hazard. Off-site residue utilization would be encouraged in place of burning, and burning of chemically treated vegetation would be prohibited.

Prescribed fire will not be used to treat logging slash for site preparation. Burning of logging slash will be allowed only for protection purposes, and then only if no other vegetation management tool will achieve the same hazard reduction. The Fuel Appraisal Process will be used to determine whether or not slash will be treated to reduce wildfire hazard. Prescribed fire may be used for treating natural fuel accumulations for reducing wildfire hazard, wildlife habitat improvement, and range improvement.

Use of herbicides is allowed. Burning of chemically treated vegetation will be prohibited.

Alternative G

This alternative manages competing and unwanted vegetation aggressively, to maximize production of resources for human use. All techniques for managing vegetation are available. This is the choice that stresses maximum production of goods and services for human use.

Alternative H

The theme here is to reduce the reliance on herbicides, to continue the reduction in the use of fire for treating slash, and to support providing goods and services at high levels.

To achieve its purposes and theme, this alternative emphasizes preventing vegetation management problems. All methods for managing competing and unwanted vegetation will be available. Protecting rural communities from the effects of smoke is a high priority. This alternative also requires early involvement of the public to help set project goals, assist in environmental analysis, observe project implementation and to monitor the results of projects.

Alternative H is the preferred alternative identified in the Final EIS.

## Other Alternatives Considered

Several other alternatives were suggested and considered, but not studied by the Interdisciplinary (ID) Team as fully as the final eight alternatives.

Alternative Responding to Oregon Air Quality Legislation: One alternative examined how the Forest service would conduct its programs in light of possible new legislation for air quality in the State of Oregon. However, the specific provisions of the law were not yet available and the alternative would have been highly speculative. And, the alternatives that were considered in detail do address the effects of various levels of prescribed burning on air quality.

Alternative for Maximizing Employment: This alternative would have stressed the use of labor-intensive practices in managing vegetation. However, initial analysis showed that it would require larger budgets than could be reasonably expected, and the remaining alternatives do cover a substantial range of job levels.

Alternatives With Unlimited Budgets: During early analysis the ID Team proposed a "subalternative" for each of the original action alternatives. Each subalternative was the same as its original except that it assumed unlimited budgets would be available to do whatever was needed in implementing that alternative. However, after analyzing the data from each National Forest on both sets of alternatives, it became evident that the Forest's vegetation management programs would not significantly change when they assumed that budgets would not be constraining. The ID Team then discontinued analysis and presentation of these subalternatives. In their present form, Alternatives A, D, E, F, and H represent the most reasonable and likely balance of costs and work (outputs) that would be expected, given their respective themes.

"Current" Situation Alternatives: The ID Team at first considered two separate alternatives to reflect a "current" situation. Two were needed because current could mean either 1) before the injunction (1984) when herbicides were available, or 2) really current, where the injunction prohibits our use of herbicides. However, these situations are already represented in Alternatives A (no herbicides) and B (rely on land management plans), and they were eliminated from separate consideration.

## ISSUES AND RESPONSES

During the early phase of this environmental impact analysis, the public helped us to identify the important issues. We then used those issues to outline the scope of the decision, form the alternatives, raise questions for analysis and eventually to focus our thoughts and discussion for selecting the preferred alternatives.

What follows is a brief summary of the original seven main issues that emerged during early public participation, and how my decision for the selected alternative responds to each of them.

### Human Health

Many people are concerned about the safety of herbicides used in vegetation control. And the effects of smoke from prescribed burning has also emerged an an important health issue along with the need to evaluate the health effects of using non-chemical methods of managing vegetation.

**My decision emphasizes the importance of assuring human health for workers and the public. It includes specific and detailed mitigation measures designed to protect human health.**

### Public Participation

Members of the public asked to be included throughout the development of the Draft Environmental Impact Statement. They wanted to continue participation and information sharing after the decision has been made. Additionally, members of the public asked for participation in site-specific, project level planning; and for readable, clear analyses and documents.

**I am committed to a decision process for vegetation management that includes full and ongoing public participation and information sharing; public participation in site-specific, project level planning; and readable, clear analyses and documents. I am directing the line and staff officers of the Region to do likewise.**

### Social and Economic Effects

Many Forest activities directly support jobs in some sectors and indirectly in others. The vegetation management program will have economic effects, and effects on social cohesion and the well-being of communities.

The selected alternative emphasizes social and economic well-being by directing that vegetation management activities be conducted to meet all the goals and objectives of Forest Land Management Plans, including the production of goods and services at planned levels.

### Cost and Benefit Analysis

People are concerned about the costs and benefits of the methods used in managing vegetation, and that money and resources be wisely managed and put to the highest and most beneficial use.

Alternative H requires that project decisions be guided by cost efficiency as well as human health risks and environmental effects.

### Environmental Effects

The public has been consistently concerned about the physical and biological effects from applying vegetation management techniques. This concern focuses on long term health and productivity of forest ecosystems.

**My decision emphasizes the use of natural processes and includes detailed mitigation measures for protection of environmental quality. In addition, both the FEIS and this Record of Decision require specific new procedures for conducting vegetation management programs that are considering the use of pesticides: early site-specific analysis, a five-step project design process, and formal monitoring. Taken together, these new procedures directly address the need to minimize environmental effects.**

### Effectiveness of Techniques

There are a number of methods used in managing competing and unwanted vegetation. People want us to be sure that we use methods and techniques that will achieve desired results.

**My decision provides for the use of all tools with the exception of three specific herbicides. The decision also directs that early planning, detailed site specific analysis and integrated pest management be conducted for all projects.**

### Interagency Coordination

Many agencies have a shared interest in vegetation management that overlaps with Forest Service responsibilities. It is important to coordinate with national, state, and local interests in developing programs for management.

**Joint Forest Service/cooperator planning is required for all vegetation management projects conducted by cooperators on National Forests. I am also directing that line and staff officers of the Region assure that provisions of this EIS and my decision are incorporated in all relevant agreements, special use permits, easements, cooperative resource management plans, memoranda of understanding, and work plans.**

## PUBLIC INVOLVEMENT AND RESPONSE TO PUBLIC COMMENT

The public has been actively involved in developing this decision. The issues relating to vegetation management have long been of concern to many people. Over the past years, interaction with interested and concerned people on vegetation management issues was often controversial and full of conflict. The result of that era was a court injunction in 1984, prohibiting the use of herbicides until further analysis was completed by the Forest Service.

In developing the new program for vegetation management, it was important to work to change these previously conflict-charged relationships with individuals and organizations into collaborative relations.

We therefore set high goals for participative public involvement by working with people early and continuously in the process. Cooperative relations with state and national agencies were further developed. Expert technical and scientific review were included in the strategy designed to involve everyone interested.

We began by conducting scoping meetings to set public involvement objectives for people who had high interest. During these meetings we identified and developed the best strategies to incorporate public participation in the vegetation management decisionmaking that would be forthcoming. These key players included individuals who were spokespersons for their respective organizations, and who had an interest in working toward mutually acceptable solutions after the 1983-84 litigation.

During the course of the initial meetings, a variety of strategies for involving the public throughout the development of the EIS were worked out. They included:

- Periodic requests for participation in our planning process mailed to all interested parties.

- Northwest Coalition for Alternatives to Pesticides (NCAP) and Oregonians for Food and Shelter (OFS) providing leadership in coordinating involvement of the segments of the public they represent.

- Issue workshops for the Forest Service hosted by NCAP and OFS.

- Environmental and business community work groups assisting the Forest Service Interdisciplinary Team.

- A special outreach program to Forest Service employees.

- Contacts and close coordination with other interested organizations and agencies.

Throughout the development of the Draft and Final EIS, people were kept informed and provided opportunities for feedback.

During this EIS process, many public involvement activities have taken place:

- We published seven "Requests for Participation" with information on progress and current status.

- We held two issue workshops.

- Three working groups (NCAP, OFS, and Oregon Society of American Foresters) worked for over twelve months with the Interdisciplinary Team.

- Forest Service employees received all mailings and participated in special briefings.

- Over a hundred other organizations were contacted and invited to participate in the analysis. Many of them did.

The Draft EIS was released on October 15, 1987. According to NEPA regulations, a 45-day public comment period is required for the Vegetation Management Draft EIS. We decided on a longer, 90-day review because of the broad scope and complexity of this particular document. A 30-day extension was granted in January 1988, bringing the total review time to 120 days--October 15, 1987, through February 15, 1988.

We received over 5,000 responses to the Draft EIS from 29 states and British Columbia. The responses came from individuals, organizations, associations, elected officials, and state and Federal agencies. The majority were well-reasoned, thoughtful letters and became valuable contributions to the Final EIS.

About 74,000 individual comments came from the letters (an average of 15 comments per letter). Eighty six percent of these comments came from form letters, that is, the same 15 comments, 3,000 times. Fourteen percent of the comments came from individually written letters. Although responses came from 29 states, most were from Oregon (4,100 responses) and Washington (600 responses).

Some people addressed broad, sweeping issues while others commented on specific technical points. Still others did a good job of editing. Most of the responses were submitted by individuals acting on behalf of themselves or their families. The next largest groups of respondents were conservation and environmental groups, timber industry businesses, associations/unions and county officials.

The main messages from the public comments were that:

- The presentation of human health material in the Draft EIS was too technical and difficult to understand.

- People could not determine local effects of the alternatives.

- There could (and should) be one alternative that both protects human health and supports production of goods and services at plan levels.

As part of our committment to working closely with people in the planning process, we responded to the letters we received. We assured them that we received their response, thanked them for participating, acknowledged the points they made, and explained how we would be using their response to develop the final document.

We then set about using the full range of public comments to develop the Final EIS. We developed a new, plain-language summary of the human health analysis. This summary now appears as a new appendix (The Characterization and Management of Risk), and the text from that summary replaces discussions about human health risk in the EIS. We conducted additional analysis to show local, Forest-by-Forest timber harvest and economic effects. And finally, we developed a new alternative, drawing features from Alternatives B, D, E, and B+, as suggested by members of the public.

Finally, the FEIS shows how we used public comments in two ways. First, the most substantive comments, and our response to each, are listed in Appendix I. Second, at the beginning of each chapter in the FEIS we have highlighted comments that suggested the biggest changes, and how the FEIS responds to the comment.

## EXPECTED RESULTS

### Introduction

As a result of our analysis, the public's participation, my selection of Alternative H and the whole EIS process, I am expecting a number of changes in the way we conduct our vegetation management program. It is important for both the public and our employees to be clear about those changes. This section presents a summary of them.

### Mitigation Measures

We developed mitigating measures to reduce, avoid, minimize, rectify, or compensate for impacts on the environment which might result from vegetation management activities.

The measures reflect Federal and state laws; existing direction found in Forest Service Manuals and land management planning documents; past experience; and current research. It is important to understand that the mitigating measures are specific to methods, not to the alternatives. Whatever method is used under any alternative, the mitigating measures associated with that method will be followed. Below are highlights from the mitigation measures which are developed in detail in Chapter IV of the EIS.

For All Methods:

- Conduct scoping and environmental analysis for each proposed project.
- Use written silvicultural prescriptions, prepared or approved by a Certified Silviculturist.
- Use a site specific diagnosis that meets Forest Service Handbook standards (2409.17), and treatment needs (2409.26c).
- Prepare a human health risk management plan for each project.
- Provide training and quality control at regional, forest, and district offices.
- Adherence to all state and Federal laws.
- Adherence to Forest Service health and safety handbook.

For Biological, Cultural, and Grazing Methods:

- Biological control agents will be used only in cooperation with appropriate Federal and state agencies.
- Inform downstream water users that could be affected directly.
- Evaluate genetically-adapted seedling use to natural diversity of forest and range ecosystems at the Regional genetics program level.
- Protect resources from grazing impacts using the guidelines under FSM 2200 Range Management and FSM 2500 Watershed Management
- Strict control of livestock near wetlands and riparian areas.

For Manual Methods:

- Analyze worker health and injury risks.

For Mechanical Methods:

- Tractors on steep (35 percent and greater) slopes prohibited.
- Tractors prohibited on critical soils.
- Tractors prohibited on erodable soils in municipal watersheds.
- Tractors limited to low-impact operating periods.
- Leave buffers along streams, lakes, and wetlands.
- No slash piling in stream flood zones.

For Using Herbicides:

- Notify downstream water users and adjacent landowners.

- The herbicides amitrole, diuron, and fosamine will not be used in the Region's vegetation management program.

- The herbicide dalapon will not be used in roadside vegetation management nor in any other situations where its use could result in exposure to the public either through routine operations or accidents.

- Female workers (either Forest Service employees or contract workers) will not be used in backpack spray or hack and squirt operations involving the application of 2,4-D, glyphosate, dicamba, tebuthiuron, triclopyr, simazine, or bromacil.*

- Female workers (either Forest Service employees or contract workers) will not be used as mixers or loaders in atrazine or bromacil applications.*

- Female workers (either Forest Service employees or contract workers) will not be used in dalapon applications.*

- The herbicide atrazine will not be applied aerially.

- Diesel oil will not be used in herbicide applications except as an adjuvant (not to exceed 5 percent of the spray mixture).

- Kerosene will not be used in herbicide applications, except as an inert ingredient in the ester formulation of triclopyr.

- Follow herbicide label instructions.

- Use herbicide formulations that contain only inerts that are recognized as generally safe by the Environmental Protection Agency (EPA), or are of a low priority for testing by EPA. Use of other inerts (identified by EPA as a high priority for testing, or those that have been shown to be hazardous) requires full assessment of human health risks incorporated into the NEPA decision-making process.

- Protective clothing will be worn by all workers (both Forest Service employees and contract workers) involved in herbicide mixing, loading, backpack applications, and hack-and-squirt applications.

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* Research studies, including both laboratory studies of animals and studies of human populations, demonstrate the potential for gender-specific adverse health effects. The intent of these measures is to prevent females from coming in direct contact with the herbicides in question. These measures will not be used as a basis for sex descrimination and will not be used as a factor of consideration in hiring, promotion, or any other personnel action. Females, or any employees not wanting exposure to these herbicides will be given alternate work assignments that do not involve direct contact with herbicides. There are many assignments, even in herbicide operations, that do not involve direct contact with herbicides.

- Public notification will be used for all applications where there is a potential for public exposure, requesting that people who know or suspect that they are hypersensitive to herbicides contact the Forest Service office proposing the project to determine appropriate risk management measures.

- Workers (both Forest Service and contract) who know that they are hypersensitive to herbicides will not be used for application projects. Workers who display symptoms of hypersensitivity to herbicides during application will be removed from the project.

- Take precautions against accidental leaks.

- Do not prepare mixtures or clean equipment where ground water could be contaminated.

- Control spray to prescribed boundaries.

- Leave buffers along streams, lakes, and wetlands.

- Determine appropriate management of streamsides along dry Class IV streams.

- Use pilot vehicles when transporting mixes.

- Exposure monitoring will be conducted required for all herbicide application projects. Pertinent details will be documented, including herbicides used, land areas treated, dates and times of applications, people involved, and mitigation measures followed.

- Monitor and assure effectiveness of mitigation measures during spray operations.

- Follow Forest Service Manual Direction (2150) for conducting projects.

- Meet Forest Service Handbook standards as follows:

    a. Chapter 2109.11 for planning projects, and for storing, handling and transporting herbicides.

    b. Chapter 2109.13 to define worker training and experience requirements.

    c. FSH 6709.11, Chapter 9 to identify worker safety requirements.

- Individual National Forests will develop detailed guidance for projects as part of project environmental analysis.

- Use licensing and training to maintain applicators' knowledge of chemical application techniques emphasizing proper procedures.

- Post material safety data sheets at storage facilities.

- Avoid skin contact with diesel oil and kerosene.

For Using Prescribed Fire:

- Avoid excessive consumption of litter and duff.
- Reduce fuel consumption on steep (60 percent) slopes.
- Leave unburned buffers along streams.
- Protect air quality, following all state and local regulations.
- Avoid smoke intrusion into state-identified sensitive areas.
- Use the best available technology to reduce smoke.
- Comply with Oregon State Implementation Plan prohibitions.
- Comply with Washington State Smoke Management Plan and Implementation Plan.
- Vegetation treated with herbicides will not be burned for at least one year following treatment.

Future Public Participation

**Another expected result is that I am committed to a decision process for vegetation management that includes full and ongoing public participation and information sharing; public participation in site-specific, project level planning; and readable, clear analyses and documents. I have directed the line and staff officers of the Region to do likewise.**

Environmental Analysis and the "Five Step Process"

**When environmental analysis is conducted for vegetation management projects, additional emphasis will be given to five aspects of the established analysis and decisionmaking process.**

These five aspects of the NEPA process--the "five steps" discussed here--focus attention on the site-specific ecological features of the competing or unwanted vegetation. It requires that we carefully examine when action is needed, design and conduct the project carefully, and provide for follow-up on (and learning from) the project.

"Five Steps" in Managing Competing and Unwanted Vegetation

SITE ANALYSIS

What's there? What's likely to happen? What are Forest Plan goals?

SELECT STRATEGY

When to act? What strategy to use?

DESIGN PROJECT

Incorporate specific requirements, mitigation, risk management plans, and reporting and training requirements. Use only permitted tools. Include Forest Plan standards and guidelines.

ACTION

Do the work.

MONITOR

Successful project? What was learned? More work needed?

These five steps are familiar to many as the scientific management method. Others know them as the analytical steps used in integrated pest management. They are commonly used in silvicultural prescriptions, and are partly documented in the Timber Stand Improvement Handbook (FSH 2409.26c). They are intended to provide Forest-level direction in implementing the vegetation management portion of any of the nine vegetation management activities covered by this EIS, and described in detail in Appendix G.

Environmental analysis is not a rigid process. Sections may be done in various order and some parts done several times. The "five step process" is readily compatible with environmental analysis. Many items evolve and are developed within "scoping", where the scope of the action, its context, and further analyses are examined. The following figure illustrates how the five-step process fits within environmental analysis.

How the Five Step Vegetation Management Process
Fits within Environmental Analysis

| ENVIRONMENTAL ANALYSIS ("The NEPA Process")* | VEGETATION MANAGEMENT PROCESS |
|---|---|
| Scoping | |
| -identify the action | Site Analysis |
| -identify agencies and responsible official | |
| -look for issues | |
| -explore possible effects and existing direction | Site Analysis, Select Strategy |
| -assess public participation needs and make contacts | Design Project |
| -identify skills needed | Design Project |
| -convene interdisciplinary team, identify cooperators, assign tasks | Design Project |
| -expand public involvement as appropriate | Design Project |
| -plan for an orderly analysis (analysis criteria, issues, alternatives, other analysis, public involvement) | Site Analysis, Design Project |
| Collect Data | Site Analysis |
| Interpret Data | Select Strategy |
| Develop Alternatives | Design Project, Site Analysis |
| Estimate Environmental Consequences | Site Analysis, Select Strategy |
| Evaluate Alternatives | Select Strategy |
| Identify Preferred Alternative(s) | Select Strategy |
| Documentation (as appropriate) | |
| Decision | Select Strategy |
| Implementation | Action |
| Monitoring | Monitor |

* Adapted from Exhibit 3, FSH 1909.15, 06

Implementation: Site-Specific Analysis

All tools--manual, mechanical, burning, biological, herbicides, and no-action--are appropriate responses under Alternative H. Each National Forest, however, will actively look for opportunities to reduce their past reliance on herbicides.

Herbicides will be employed only when necessary to meet management objectives. This means that herbicides may be used only when other methods would be ineffective (will not meet prescription objectives) or would increase project cost unreasonably.

**I expect site-specific environmental, biological, sociologic, and economic factors to be considered in the development of projects.**

The following elements are basic for site analysis, selection of strategy, and design of any vegetation management project:

- Management objectives, required mitigation measures, and anticipated resource outputs;
- Potential risk of adverse human health effects, for both workers and the public;
- Risk of unacceptable environmental damage;
- Project feasibility, which is defined by logistical considerations, as well as the availability of money, people, time, and equipment; and,
- Potential for development of preventive strategies through pest habitat modifications or the complementing of natural ecosystems and processes.

During implementation of the vegetation management program, each National Forest will provide guidance for project planners and prescriptionists. When treatment options are relatively equal based on the factors considered, the non-chemical option will be selected. The appropriate resource staff in the Regional Office, as well as Forest Pest Management, will assure that there is a consistent understanding of the intent of the herbicide use policy and that the major factors considered are similar on all National Forests.

Monitoring

**When we begin to implement this program we will need to keep track of what we do and how well we are doing.**

The discussion below describes three categories of monitoring.

Program Monitoring

We will need to assure ourselves that we are in fact following the selected alternative and that we are managing our program the way that it is outlined in this Record of Decision. Key questions for program monitoring will be:

- Are we reducing our reliance on herbicides?
- Is the public being informed and involved in our program?
- Are we preventing vegetation management problems and the need for large correction projects?
- Are we supporting the production of goods and services?
- Are human health risks being managed well?

Project Management Monitoring

Project managers will need to collect the information and maintain records showing:

- Use of the NEPA process with emphasis on the "five-step" process as outlined in this Record of Decision.
- Adherence to all appropriate mitigation measures.
- Use of a project risk management plan.

Project Effects Monitoring

Project managers will also monitor their projects and record the results to address questions like:

- Were the project objectives achieved?
- Were the mitigation measures effective?
- What were the short-term (and long-term) vegetative effects of the project?
- What lessons were learned that could be applied to other projects?

To achieve the monitoring outlined above, I am expecting that we will conduct management reviews of vegetation management programs and activities. Forest Supervisors will be conducting vegetation management activity reviews on their Forests. Regional Staff Directors will collect basic information summaries to address program monitoring questions.

## Working With Cooperators

**Those who hold easements, rights-of-way, special use permits, and other rights of use on National Forest land will need to work together with Forest Service representatives to implement Alternative H and the Record of Decision for their vegetation management programs. Both cooperators and the Forest Service will be doing more analysis and planning to develop vegetation management programs for these lands than in the past. I see this as being a joint effort between cooperators and the Forest Service. Each will have a role in developing projects, analyzing effects, and selecting alternatives.**

Both parties should work together in the scoping and analysis for project proposals. Generally, the cooperator will provide data and recommend alternatives. Completing the environmental analysis process will normally be a Forest Service responsibility. The cooperator will then implement the selected alternative, including all mitigation and monitoring requirements.

The coordination and involvement of the cooperator, the public and the Forest Service is critical to the successful implementation of projects on these lands.

## Ties to Forest Plans

Forest plans are now being developed for each National Forest in the Region. The Plans assume, as do current plans, that all methods of managing vegetation will be available. However, the final decisions represented in this document could affect the Forest Plans. New vegetation management procedures and mitigation measures could change the way lands and resources would be managed on a National Forest.

The decisions from this EIS will be incorporated into Forest Plans. This could be done in one of several ways, depending on the stage of development each Forest Plan is in. Changes can be incorporated 1) as a Revised Proposed Forest Plan and its Revised DEIS; 2) incorporated in the Forest Plan and its FEIS; or 3) as an amendment to a Forest Plan already in effect.

APPEAL RIGHTS

This decision is subject to appeal pursuant to 36 CFR 211.18 (published in the Federal Register, Volume 48, No. 63, FR 13425, March 31, 1983). Notice of appeal must be in writing and submitted to the reviewing officer:

James F. Torrence, Regional Forester
USDA Forest Service
Pacific Northwest Region
319 S.W. Pine Street
P.O. Box 3623
Portland, OR 97208-3623

The notice of appeal must be filed within 45 days of the date of this decision. An appeal will not automatically stop implementation. A stay, if granted, stops initial implementation of the decision while appeal is considered on its merits. A request for stay must accompany the notice of appeal to be considered.

JAMES F. TORRENCE
Regional Forester
Pacific Northwest Region

December 8, 1988
Date



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